CLAIMS

1. An apparatus comprising:

a de-interlacer circuit configured to generate a first progressive signal having a first rate in response to an interlaced signal;

a rate converter circuit configured to generate a second progressive signal having a second rate in response to said first progressive signal; and

a synchronization circuit configured to generate an output video signal synchronized with an output audio signal in response to an input audio signal and said second progressive signal.

2. The apparatus according to claim 1, further comprising:

an interlacing circuit configured to generate said output video signal having an interlaced pattern.

3. The apparatus according to claim 1, wherein said first rate comprises 60Hz and said second rate comprises 50Hz.

4. The apparatus according to claim 1, wherein said first progressive signal has a first image size and said second progressive signal has a second image size, wherein said first and second image sizes are different sizes.

5. The apparatus according to claim 4, wherein (i) said first image size comprises a first horizontal size and a first vertical size and (ii) said second image size comprises a second vertical size and a second horizontal size.

6. The apparatus according to claim 1, wherein said rate converter is configured to (i) receive a series of incoming progressive frames with a timestamp, (ii) compare the timestamp value to a clock running at the video output rate, (iii) repeat the previous incoming progressive frame if the input is running early or (iv) drop the incoming progressive frame and output the next incoming progressive frame if the input is running late.

7. The apparatus according to claim 1, further comprising:

a vertical rescaling circuit configured to resize said output video signal.

8. The apparatus according to claim 1, further comprising:

an interlacer circuit configured to convert said output video signal to an interlaced signal.

9. The apparatus according to claim 1, wherein said output signal comprises a digital video signal.

10. A method for rate conversion of a digital video signal comprising the steps of:

(A) converting an interlaced video signal to a first progressive video signal having a first rate;

(B) generating a second video signal having a second rate in response to said first video signal; and

(C) synchronizing said second video signal to an input audio signal.

11. The method according to claim 10, wherein said first rate comprises 60Hz and said second rate comprises 50Hz.

12. The method according to claim 10, wherein said first progressive signal has a first image size and said second progressive signal has a second image size, wherein said first and second image sizes are different sizes.

13. The method according to claim 12, wherein (i) said first image size comprises a first horizontal size and a first vertical size and (ii) said second image size comprises a second vertical size and a second horizontal size.

14. The method according to claim 10, further comprising the step of:

(D) converting said second video signal to an interlaced signal.

15. The method according to claim 10, further comprising the step of:

resizing said second video signal.